

PLATE CONSTRUCTION OF HIGH TEMPERATURE
AIR-TO-AIR HEAT EXCHANGER

ABSTRACT OF THE DISCLOSURE

A fuel cell system including a fuel cell stack, a reformer system, and a waste energy recovery (or heat exchanger) assembly is presented. The waste energy recovery assembly receives an anode supply and a cathode supply that are heated by exhaust gases from the fuel cell stack. The heated anode supply and cathode supply are then directed to the fuel cell stack. The waste energy recovery assembly includes a series of stacked plates. The flow direction of the plates alternates from one plate to the next. These plates are alternately stacked until the desired flow area and heat transfer are achieved.

5 Since the direction of flow of each plate is perpendicular to the direction of flow of the next plate in series, the cool (anode and cathode) gases flow along side a plate experiencing a flow of heated exhaust gases and are thusly heated.

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